



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/824,598 | 04/15/2004 | Yun-Bok Lee | 053785-5179 | 6648 |
| 30827 | 7590 | 10/20/2006 | EXAMINER | |
| MCKENNA LONG & ALDRIDGE LLP 1900 K STREET, NW WASHINGTON, DC 20006 | | | VU, PHU | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2871 | |

DATE MAILED: 10/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/824,598

Applicant(s)

LEE, YUN-BOK

Examiner

Phu Vu

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 8/7/2006
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 3-9 and 11-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 3-9 and 11-17 is/are rejected.
- 7) ☐ Claim(s) 18-19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 8/7/2006 have been fully considered but they are not persuasive. The previous rejection on claim 3 asserted official notice that it would have been obvious to one of ordinary skill in the art to use a rubbing roll having a length corresponding to the short side of the substrate for several advantages such as to reduce manufacturing time, cost and increase production efficiency. Applicant has properly traversed this rejection therefore Mihara US Patent 6122032 has been supplied show the limitation of a rubbing roll having a length corresponding to the short side is known in the art. Therefore this reference will be explicitly incorporated in the previous rejection as evidence that the limitation was known in the art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al., US Patent No. 6,078,375 in view of Mihara US Patent No. 6122032 in view of Hirakata US Patent No. 5,977,562.

Matsumoto discloses (col. 4, lines 4 - 60) and shows in Figs. 2 and 3, an in-

plane switching mode liquid crystal display device, comprising:

- first (101) and second (201) substrates facing and spaced apart from each other, wherein one of the first and second substrates is rubbed in one direction, which can be any direction;
- array elements including field-generating electrodes (103, 107) formed on the first substrate (101);
- and a liquid crystal layer (300) between the first substrate and the second substrate such that at least a portion of the liquid crystal is oriented in the one direction (Fig. 3),
- wherein the first and second substrates have a rectangular shape having a long side and a short side, and the liquid crystal layer is oriented by the rubbing using a rubbing roll (well known to perform rubbing by using rubbing roll). Matsumoto differs from the claimed invention because he does not explicitly disclose that the field-generating electrodes having a curved shape. Hirakata discloses an in-plane switching mode liquid crystal display device having field-generating electrodes wherein the electrodes have curved shape and a space between the electrodes has a ring shape (Fig. 11). He also discloses that due to having curved shaped electrodes it is possible to produce uniform electric field between the electrodes (col. 9, lines 51-55).

Hirakata is evidence that ordinary workers in the art would find a reason, suggestion or motivation to use curved shape electrode. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use curved shape field-generating electrodes in the device of Matsumoto for the advantage

of producing uniform electric field between the electrodes, as per the teachings of Hirakata. Still lacking is the limitation such as the rubbing roll has a length corresponding to the short side of the substrate. However, it is notoriously well known in the art to use a rubbing roll having a length corresponding to the short side of the substrate for several advantages such as to reduce manufacturing time, cost and increase production efficiency and thus would have been obvious. Mihara provides evidence that it was known at the time of the invention to use a rubbing roll having a length corresponding to the short side of the substrate and rubbing in the direction parallel to the long side (see fig. 3).

Accordingly, as per claims 3 and 8, since the method of fabricating the display device merely discloses the steps of forming each element and since each element must be formed to make the device, the method would have at least been obvious in view of the device.

As to claim 5, Matsumoto also shows in Fig. 6, that the array elements include a gate line (102), a data line (109) crossing the gate line and a thin film transistor (TFT) connected to the gate line and the data line.

As to claims 4 and 6, it is clear from Fig. 3 of Matsumoto that the rubbing direction is parallel to the long side of the substrates and forms an angle with respect to the gate line (Fig. 6).

As to claim 9, Matsumoto also discloses that the second substrate (201) includes a color filter.

Claims 7-12, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto in view of Mihara in view of Hirakata and further in view of Hakoda et al JP 09-325328.

Matsumoto when modified by Hirakata and Mihara differs from the claimed invention because they do not explicitly disclose that the first and second substrates include first and second cell regions having sizes different from each other and a dummy region, a plurality of first liquid crystal cells are formed in the first cell region and a plurality of second liquid crystal cells are formed in the second cell region such that the plurality of first liquid crystal cells and the plurality of second liquid crystal cells have a rectangular shape, wherein a longer side of each first liquid crystal cell is parallel to a first direction and a longer side of each second liquid crystal cell is parallel to one of the first direction and a second direction perpendicular to the first direction.

Hakoda discloses a liquid crystal display device having first and second substrates including first and second cell regions with sizes different from each other and a dummy region (region where the panels are not formed), a plurality of first liquid crystal cells are formed in the first cell region and a plurality of second liquid crystal cells are formed in the second cell region such that the plurality of first liquid crystal cells and the plurality of second liquid crystal cells have a rectangular shape, wherein a longer side of each first liquid crystal cell is parallel to a first direction and a longer side of each second liquid crystal cell is parallel to one of the first direction and a second direction perpendicular to the first direction (Fig. 1). Hakoda also discloses that by forming such panel patterns it is possible to reduce manufacturing cost (abstract).

Hakoda is evidence that ordinary workers in the art would find a reason, suggestion or motivation to have panel patterns of varying sized plural liquid crystal display device panels. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the display device of Matsumoto when modified by Hirakata by forming a plurality of first liquid crystal cells in the first cell region and a plurality of second liquid crystal cells in the second cell region such that the plurality of first liquid crystal cells and the plurality of second liquid crystal cells have a rectangular shape, wherein a longer side of each first liquid crystal cell is parallel to a first direction and a longer side of each second liquid crystal cell is parallel to one of the first direction and a second direction perpendicular to the first direction and a dummy region for the advantage of reduced manufacturing cost.

Accordingly, claims 7, 15 and 16 would have been obvious.

As to claim 11, Matsumoto also shows in Fig. 6, that the array elements include a gate line (102), a data line (109) crossing the gate line and a thin film transistor (TFT) connected to the gate line and the data line.

As to claim 12, it is clear from Fig. 3 of Matsumoto that the rubbing direction is parallel to the long side of the substrates and forms an angle with respect to the gate line (Fig. 6).

As to claim 17, Matsumoto also discloses that the second substrate (201) includes a color filter.

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto and Mihara and Hirakata and Hakoda and further in view of Leenhouts et al. US Patent No. 4,609,255.

Even though Matsumoto discloses the use of first and second polarizers (140, 240), Matsumoto when modified by Hirakata and Hakoda differ from the claimed invention because they do not explicitly disclose that a first polarization axis of the first polarizer is perpendicular to the one orientation direction and a second polarization axis of the second polarizer is parallel to the one orientation direction.

Leenhouts discloses a liquid crystal display device including a front polarizer and a back polarizer. He further discloses that the polarization direction of the front polarizer runs parallel to one orientation direction and the polarization direction of the back polarizer is perpendicular to one orientation direction. He also discloses that such an arrangement improves contrast ratio (col. 2, lines 27-43).

Leenhouts is evidence that ordinary workers in the art would find a reason, suggestion or motivation to use polarizers wherein a first polarization axis of a first polarizer is perpendicular to the one orientation direction and a second polarization axis of the second polarizer is parallel to the one orientation direction.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the display device of the Matsumoto when modified by Hirakata and Hakoda such that a first polarization axis of the first polarizer is perpendicular to the one orientation direction and a second polarization axis of the

second polarizer is parallel to the one orientation direction for advantages such as improved contrast ratio.

Accordingly, claims 13 and 14 would have been obvious.

Allowable Subject Matter

Claims 16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 16-17, there is no prior art of record that teaches the common electrode includes an outer common electrode pattern and inner electrode pattern, and wherein the pixel electrode includes a first pixel electrode pattern formed between the outer and inner common electrode patterns, a second pixel electrode pattern having a discal shape and located inside the inner common electrode pattern, and a pixel connecting line. The prior art of record teaches pixel and common electrodes of a spiral shape thus the limitations of claims 16-17 clearly distinguish over the prior art.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

Art Unit: 2871

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu Vu whose telephone number is (571)-272-1562.

The examiner can normally be reached on 8AM-5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Phu Vu
Examiner
AU 2871


ANDREW SCHECHTER
PRIMARY EXAMINER